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AUTHOR Poteet, James A.
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ABSTRACT

Information Based Evaluation (IBE) is identified as a design procedure for assessing a variety of projects, programs, and educational changes. IBE was used to evaluate a Comprehensive Diagnostic Teaching Center (DTC) which, in addition to providing teacher training and services to handicapped pupils, would bring together and focus all of the resources of the Indianapolis Public Schools on this problem. Students were referred to the DTC by the school psychologist usually in cooperation with the classroom teacher. The philosophical approach which guided the diagnostic activities of the DTC is that of diagnostic/prescriptive teaching seen as an on going educational process wherein instructional strategies, selected as a result of diagnostic activities are matched to a student's unique learning mode. IBE places the information needs of concerned persons as the overriding concern of any evaluation. Reasons are stated indicating the inadequacy of traditional performance objective evaluation. However, IBE is not free of the use of objectives; their use is justified when feedback is important to information users. When looking at the evaluation process for any program, it is recommended that one concept of evaluation is adopted and maintained through the life of the project insofar as possible. (RC)

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The Use of Information Based Evaluation in Evaluating the Diagnostic Teaching Center

James A. Poteet
Diagnostic Teaching Center
Indianapolis Public Schools

A paper presented at the symposium "Information based evaluation: A design procedure" (Symposium, Division D/NCME) at the American Educational Research Association conference on April 17, 1974, Chicago, Illinois.

The Use of Information Based Evaluation in Evaluating the Diagnostic Teaching Center

James A. Poteet
Diagnostic Teaching Center
Indianapolis Public Schools

This presentation will be concerned with the use of Information Based Evaluation (IBE) by a consulting firm to evaluate the Diagnostic Teaching Center (DTC) of the Indianapolis Public Schools and should be viewed within the perspective of this symposium. It will not present tables of chi square, correlation co-efficients, nor even mention multiple regression analysis. Thus, while it might appear to be statistically boring, it might also be, for an AERA convention, curiously refreshing.

For a complete perspective of the relationship that IBE has had with the DTC, it will be necessary to give a historical account of the development of the DTC in some detail. This information will allow you to formulate evaluative questions that are of interest to you regarding the project. Following the information on the development and operational procedures of the DTC, evaluation activities that have been employed throughout the life of the DTC will be discussed.

Development of the DTC

The need for a diagnostic teaching center was crystallized by a survey taken in the light of legislation passed by the 1969 legislature of Indiana.

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This act mandated each school corporation in Indiana to provide educational programs for all handicapped pupils between the ages of six and 18 years of age by 1973. The mandate is now operational. The survey was conducted with parents of handicapped and non-handicapped children, with students, and with personnel in community agencies such as child guidance clinics and the Indiana University medical school. Reports within the public schools from psychologists, classroom teachers of exceptional children, social service and guidance personnel, and elementary school principals were indicative that such a need for a comprehensive center did exist.

By looking at staff availability, the number of children who would need service, and the number of persons presently employed or revealed as needed by the survey, it was apparent that utilizing the present approach to meeting the needs of the handicapped children while attempting to comply with the mandated legislation would be both difficult and expensive to effect.

Thus, there was determined a need to improve the quality and/or the direction of the present activities of the classroom teachers so they might attain greater competency in providing for the borderline handicapped child who has the potential for succeeding in the regular classroom with a specialized program.

In addition, there was the clearly defined need for a facility which, in addition to providing teacher training and services to handicapped pupils, would bring together and focus all the resources of the Indianapolis Public Schools on this problem. (Proposal for a Comprehensive Diagnostic Teaching Center, 1971).

The proposal for federal funding of a Diagnostic Teaching Center was written by the director of special education and the director of psychological services of the Indianapolis Public Schools. It was submitted, approved, and became funded in July of 1971.

It was decided to house the DTC in a regular elementary school building. A ten-year-old school centrally located within the boundaries of the school district was chosen. The school building had terminated its program for junior high students, and the seven rooms left vacant were allocated to the DTC.

A project director was hired in August and his initial task was to secure staff. In this system, all staff are hired via a screening committee of three or four people. All policies, rules, and regularions of the system also pertain to the operation of the DTC. Seven teachers with regular elementary teaching experience were employed along with two teacher aides, a psychologist, a reading specialist, and two secretaries.

After 13 weeks of inservice training, the teachers and staff were ready to begin their diagnostic/prescriptive work with students. Several plans were tried in order to determine an appropriate case load which would allow the development of a quality product containing recommendations for the regular classroom teacher to use.

The management training which was emphasized by the evaluator in the early days of the DTC proved valuable in that the project director established a system for constant feedback from most activities. When the feedback indicated that a function was not operating in such a manner to

assist in goal attainment, the function was changed.

For instance, the teachers' response to a feedback evaluation form in the first year resulted in changing the content of the teacher training sessions. The module on perceptual-motor development was not felt to be useful and the teachers were hesitant to assume remedial activities in this area. The module, per se, was dropped and the educational prescriptions were altered to be more practical.

Feedback from the staff personnel when they conducted their follow-up activities suggested that the time factor alone made appropriate follow-up increasingly less likely as more students were processed through the DTC. Consequently, for the second year, follow-up specialists were employed.

During the second year, the follow-up people indicated that the classroom teachers had not become as familiar with the D/P Guide as was felt necessary to adequately implement the recommendations. Consequently, the teacher training component was changed to have time for reading of the Guide during the inservice session.

Many changes were made during the first two years of the project--several as a direct result of analyzing feedback information from a variety of sources and of having the administrative freedom to act positively on that feedback information. By now, the operational procedures are well established and a description of them follows.

Students are referred to the DTC by the school psychologist usually in cooperation with the classroom teacher. The student must display an educationally significant discrepancy between his potential and his academic

achievement. How this is done is left up to the professional decision of the classroom teacher and the school psychologist. One common method is to compare WISC to scores with standard scores of the WRAT, being aware of certain pitfalls when doing so. The school psychologist obtains parent permission before the referral to the DTC is made.

Accepted students are transferred to the DTC and transported via the regularly established special education bus routes. Sixteen students are enrolled at the DTC in phases. Each phase lasts four weeks. Four teachers are responsible for conducting complete diagnostic/prescriptive activities with four students. One teacher provides an instructional program for all 16 students in a classroom setting with the assistance of a teachers aide. The students are removed from their classroom individually and in small groups for diagnostic activities and for trial teaching. This year two staff members were assigned to two regular elementary school buildings where they perform similar duties with teacher referred students instead of at the DTC giving service much quicker.

The diagnostic/prescriptive (D/P) teachers spend the first two weeks of each phase in rather intensive testing of her four students. A minimal test battery given to each student consists of:

Informal Reading Inventory (Sucher–Allred)
Informal Math Inventory (Math Modules)
ITPA
Wepman

Bender
Frostig
PPMS
Slingerland

These data are recorded on a Staffing Review Form and are discussed in staffings for each student during the third week of each phase. Results of the staffings are taken into consideration during trial teaching for the remainder of the third and fourth weeks. In addition to the diagnostic work, the D/P teachers contact the parents to obtain pertinent medical and background information. Also, they write summaries of the diagnostic findings and compile from a bank of prescriptions, educational prescriptions appropriate for each student based on diagnostic findings. If no prescription exists, one is written and located in the file according to the retrieval plan.

Diagnostic activities are divided into Cognitive, Affective, and Psychomotor areas. The prescription file and retrieval system is organized to match the Analysis Sheets on which the diagnostic information is recorded. The academic areas of Language, Reading, and Math are filed under the Cognitive domain.

The project employes a consulting optometrist who provides a visual screening examination for all students and a consulting neurologist who evaluates those students of concern to the staff. The Language Specialist conducts hearing testing, assists in the administration and the scoring of the Slingerland, provides language development activities, and writes prescriptions for the classroom

teacher. The Reading Specialist assists the D/P teachers in reading diagnosis, writes appropriate prescriptions, and conducts the teacher training sessions on Reading and materials development.

The philosophical approach which guides the diagnostic activities of the DTC is that of diagnostic/prescriptive teaching seen as an ongoing educational process wherein instructional strategies, selected as a result of diagnostic activities are matched to a student's unique learning mode. The definition of each student's learning mode then is the crux of the diagnostic process. The Learning Mode involves the determination of the appropriate task level of instruction, the student's preferred sensory modality relative to how he processes information, and instructional situations which insure learning. When appropriate instructional strategies are matched to this determined learning mode, then learning is more likely to occur.

During the last week of each phase each D/P teacher builds a D/P Guide, a booklet containing the summary of test findings in both raw data form and in narrative description in the following six areas: Learning Mode, Language, Reading, Math, Affective, and Psychomotor. Following each summary, a few objectives are listed for the student to attain within a relatively short period of time. These objectives are used as checkpoints by the Learning Specialists during their follow-up activities. One copy of the D/P guide goes to the receiving classroom teacher and one copy remains on file at the DTC for

reference and use by the Learning Specialists. The task of creating the D/P Guides depends on a coordinated effort by all staff so that information is available to the clerks in time for the typing to be completed in time for the pages to be assembled, punched and bound in time for the teachers to read and review during the specified teacher trainig session.

For each phase, a different D/P teacher serves as class teacher for the instruction of the 16 students at the DTC. This plan allows each D/P teacher to remember what is involved in actual instructing a classroom of students. By keeping in touch, the recommendations made in the D/P Guide are meaningful and practical.

An important component of the project is training of the teachers who will be receiving the students from their 4-week stay at the DTC. The receiving classroom teachers come to the DTC on Tuesdays for 3 weeks. The project provides substitutes for these days. During this time the teachers learn about the use of behavior modification, reading and math diagnosis, and the individualization of instruction. Also, time is spent in reading the D/P Guide. The teachers note all questions which arise while reading the guide and ask the D/P teacher to respond to them during the scheduled interview later on in the day.

A session is also devoted to making teacher-made materials which have been specifically recommended for use with her student.

Along with the D/P Guide, the teacher receives a package of instructional material for use in the regular classroom with the returning student.

The Learning Specialists conduct follow-up activities when the students leave the DTC. They assist the regular classroom teacher in any way possible to help her implement the correct use of the D/P Guide and its recommendations. These activities have included obtaining more materials for use in the classroom, restructuring the classroom for new groupings, setting up behavior modification projects for target students, and demonstration teaching of a specified instructional strategy. Long-term follow-up is also conducted approximately at three month intervals.

Evaluation Activities

The DTC was funded under Title III, section 306 for a period of three years. The purpose of the Section 306 program is to test the appropriateness of specific solutions to critical national educational needs. Each project emphasizes its resources toward a limited number of students rather than try to serve directly all students who might benefit from the project. The Office of Education chose to focus on a limited number of projects across the nation to be funded at a sufficiently high level to provide for the development and delivery of a borad range of education related services to specific target populations. Fifteen percent of the funds allocated for Title III in June 1971 were for section 306 projects. Of the section

306 funds, fifteen percent were to be spent on projects for handicapped students. (A Manual for Project Applicants and Grantees, 1972)

The guidelines for the operation of Section 306 projects state that an Evaluator will be employed for the project and that an Educational Program Auditor will be employed to audit the functions of the evaluator. "The essential task of the auditor is that of reviewing the evaluation of a given project intent and anticipated performance outcomes." (Stenner & Webster, 1971, p. 21). The Auditor, then, is a reviewer of the activities specified by the Evaluator to insure that all reports are on target date and contain correct and appropriate information as previously specified.

When the Office of Education specifies that performance objectives are a requirement on which the evaluation design is to be based, and when the Evaluator notes that "...objectives are at best insufficient as a foundation for evaluation" (Peck, 1974), interesting comments begin to appear in the Auditor's report. As it now stands, the use of Information Based Evaluation is not widely accepted as total procedure for creating an evaluation design.

The Evaluator for the first year of the project saw evaluation as an aid to project management. Evaluation was considered as an integral part of project management and frequently as the foundation for good program management. By considering evaluation as a dimension of management, it was felt that the administration would acquire

an increased capacity to translate observations into action. This approach would provide the information required for guiding the future course of the project. (Evaluation Design, DTC, 1st Year, 1971).

This approach to evaluation was definitely "future" oriented since it's purpose was to gain information to allow sufficient input into the second year's planning so that the criteria of the stated objectives would be at least reasonable. The objectives for the first year were essentially geared to OBSERVE the way things were operating at the initial stage of the project.

While this approach to evaluation was established, the administration of the school system was still concerned with "does the project do any good for kids". The answer would only be available during the second year after the students had spent a significant amount of time back in the regular classroom.

The evaluation design for the second year began by viewing evaluation questions of interest and then writing objectives to determine if the questions could be answered. The use of traditional statistical approaches as well as descriptive statistics were included in the analysis of the objectives. Then an interesting thing happened. The Evaluator was promoted to a higher position within his firm, and a new Evaluator appeared on the scene. It was at this point that a more pure approach toward the use of Information Based Evaluation was instigated.

The new Evaluator had successfully implemented this approach with some forty projects at both the state and local levels. He felt that

traditional methods of evaluation were too closely tied to the traditional research models and were too complicated and complex to allow the retrieval of information for decision-making. While the use of performance objectives was seen as meaningful to project management, their use was not viewed as the best method to insure complete information utility by decision-makers.

It should be reiterated here that Information Based Evaluation might not be viewed in the same light by the Office of Education as it is viewed by the Evaluator consultant. In A Manual for Project Applicants and Grantees for Title III section 306, Draft of November 1972, the evaluation process is viewed totally via a performance objectives approach. The use of "Evaluation Design Summary Charts" is required. These charts display (a) objectives or performance to be measured, (b) measurement instruments and techniques, (c) data collection procedures, (d) data analysis techniques, and (e) data analysis presentation format.

The project Evaluator felt that the traditional performance objective evaluation approach was inadequate because of the following:

1. Basing evaluation on performance objectives restricts the focus of evaluation to intended outcomes, thus overlooking unintended outcomes which are potentially just as important.

2. Performance objectives provide a very inflexable basis for evaluation in that they are seldom changed during the program year, and thus information needs (which are fluid) cannot be adequately addressed.

3. Even if information on the attainment of all performance objectives is provided, important information is invariably

ignored because objectives are not developed with information needs in mind, but rather are developed as guideposts for program management.

4. Objectives based evaluation often views each objective as a unique area of focus and thus important relationships are often overlooked.

"In objectives based evaluation, the reference points are the program objectives. In IBE the reference points become the information users for the program and the information domains (needs). Capitalizing on these two reference points, a technique called domain analysis can be used to define and focus the direction of the evaluation" (Peck, 1973)

The concept of Information Based Evaluation is not free of the use of objectives. Their use is justified when feedback on the objectives is important to information users. The questions asked by the users are of paramount importance in information based evaluation. The desired information is then ranked in order of importance or priority as is the list of information users. Much of this work is done at the Design Conference.

For the third year's evaluation of the DTC, such a design conference was held. In attendance were the Evaluator, who chaired the meeting, the superintendent, assistent superintendent for special services, assistant superintendent for curriculum, director of special education, and the assistant to the director of federal programs. Personnel from the DTC include the project director, psychologist, Language Specialist, Reading Specialist, and the evaluator's assistant. At this conference, many questions were raised. They were subsequently categorized into the following Information Domains:

1. Student Behavior Change
   Student Characteristics

2. Teacher Behavioral Change
   Teacher Characteristics

3. D/P Guide Effectiveness
   Prescription usage (etc.)

4. Cost

5. Attitudes toward the DTC: Teachers, Administrators (Principals), Staff, Support Staff, Parents, and Students.

Specific Evaluation Questions by domains were:

A. Student Behavioral Change

1. How does the DTC effect student achievement?

2. Do the students who participate in the DTC exhibit a significant educational change in academic and affective behavior?

3. Are DTC techniques usable to quantify a child's behavior in the classroom.

4. How many students receive new assignments after their DTC work?

5. What, if any, is the cause-effect relationship between the D/P Guide and student behavioral change?

B. Teacher Behavioral Change

6. What are the characteristics of teachers who successfully implement the D/P Guide?

7. Is the D/P Guide transmitted from teacher to teacher?

8. How does the DTC workshop training effect teacher behavioral change?

9. Is there consistency in the application of the model among DTC staff?

C. Costs

10. What is the per pupil cost of the DTC by pupils in attendance?

11. What is the per pupil cost of the DTC by those affected?

12. What is the cost of developing a D/P Guide?

13. Can the utilization of the DTC as a resource reduce existing costs of instructing the mildly handicapped child?

D. Attitude toward the DTC:

14. What is the attitude of the following toward the DTC?
    teachers
    parents
    students
    staff
    support staff
    administrators

Once the Evaluator had the questions of interest, he asked the Design Conference personnel to list the users of the information in order of importance. The results were:

1. Board of Education
2. Central Administration
3. School Principals
4. Auxiliary Services
5. Teachers
6. Public
7. Project Staff at DTC

With this information, decisions were made about the evaluation activities which were necessary to answer the questions Relative to Student Behavioral Change, the Evaluator decided that an experimental and control group study would be appropriate. By having the Design Conference prior to the beginning of the school year, time was avail-

able to arrange for the selection of the two groups with data collection beginning as school opened. On the other hand, much information in the Teacher Behavioral Change domain was decided to be collected by informal observational methods.

The DTC has established a data collection procedure which contains over 125 elements of data per student enrolled. These data were loaned to the Evaluator for his use in answering the questions of interest. The questions were such that much information is required on a relatively small number of students because of the highly individualized nature of the project. Much of the data in the DTC data bank is regularly used by the project director. For instance, an attempt is made to group students of a similar age and grade level within each phase. Also, a variety of schools to be represented by students at the DTC is desired across all phases. By viewing the on-going DTC data bank information, adjustments can be made in the operational procedure for succeeding phases. These data were recently used to determine academic change for DTC students who had been returned to the regular class for a period of one year. Using data in the data bank as a pre-test, the Learning Specialists post-tested the appropriate students. This was a small sub-study within the confines of the overall evaluation design.

The Evaluator, using his concept of Information Based Evaluation met frequently with the project director throughout the year in order to establish a time line of function. Usually this procedure is

one of working backwards from significant deadlines such as due dates for quarterly reports. At these meetings, discussion centered around when things had to happen in order to obtain the necessary data and information to meet deadlines. Similar meetings prior to the opening of school assisted in establishing a Time Line for use in managing the project throughout the year.

Summary

In summary, the concept of Information Based Evaluation is being used to evaluate a program for students with learning problems in a public school setting. The project is funded under Title III, Section 306 and requires the use of an Evaluator and an Educational Program Auditor. While the Office of Education requires the use of performance objectives as a total framework of evaluation, Information Based Evaluation might be considered a broader approach to evaluation. To comply with the demands of the Office of Education, objectives were written for the project and presented in the required format. This approach can easily be incorporated within the overall concept of Information Based Evaluation.

At the present time, the Evaluator must now begin the synthesizing of available data and must obtain required additional data. Since this is the last funded year, the report should be presented in such a way as to encourage the continuation of the project supported by funds from other sources. The per pupil cost of operating the program might be viewed as expensive by school administrators, yet

it should be borne in mind that the purpose of Section 306 was not to serve all students in need. Since the administration is typically interested in the analysis of hard data, such information should be included in the final report.

When looking at the evaluation process for any program, it is recommended that one concept of evaluation be adopted and maintained through the life of the project insofar as possible. Additionally, the manager of the project should provide input to the consideration of the evaluation design. When the information users sense statistical information and performance objectives as useful, they should be built specifically into the design possibly as sub studies. With all this in mind, it seems that the use of Information Based Evaluation provides a procedure for establishing an evaluation design of merit.